

Fluor Hanford  
WSCF Lab Analytical Chemistry  
P.O. Box 1000  
Richland, WA 99354  
Telephone 373-7495  
Telefax 372-0456

0065154

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MAY 18 2005

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**Memorandum**

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W1141-SLF-04-236

To: S. J. Trent A0-21 Date: September 7, 2004

From: S. L. Fitzgerald, Manager  
WSCF Analytical Chemistry

*[Handwritten signature]*

cc:	w/Attachments	w/o Attachments
	T. F. Dale S3-28	D. J. Hart S3-30
	H. K. Meznarich S3-30	M. A. Neely S3-30
	P. D. Mix S3-30	H. S. Rich S3-28
	J. E. Trechter S3-30	L. C. Swanson E6-35
		File/LB

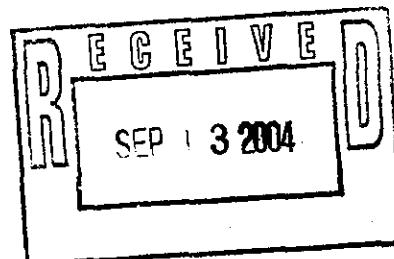
Subject: FINAL RESULTS FOR 200-LW-1/LW-2 CHARACTERIZATION - WATER- SAMPLE  
DELIVERY GROUP WSCF20041342 – SAF NUMBER F003-026

Reference: (1) Groundwater Protection Program-Letter of Instruction, FH-EIS-2003-MEM-001,  
October 31, 2002  
  
(2) HNF-SD-CD-QAPP-017, Rev. 6, Waste Sampling & Characterization Facility Quality  
Assurance Plan

This letter contains a narrative (Attachment 1) for sample delivery group WSCF20041342, the analytical results (Attachment 2), and the sample receipt information (Attachment 3).

SLF/grf

Attachments 3



0065154

**W1141-SLF-04-236**

**ATTACHMENT 1**

**NARRATIVE**

Consisting of 3 pages  
Not including cover page

## Attachment 1

### Narrative

<b>Sample Delivery Group</b>	WSCF20041342
<b>Sample Matrix</b>	WATER
<b>Sample Visual</b>	NA
<b>SAF Number</b>	F03-026
<b>Data Deliverable</b>	Summary Report

## Introduction

One (1) 200-LW-1/LW-2 Characterization - Water sample (B191D6) was received at the WSCF Laboratory on August 3, 2004. The samples were analyzed for the analytes indicated on the attached copy of the chain of custody (COC) form in accordance with the *Groundwater Remediation Program- Letter of Instruction*, referenced in the cover letter.

The narrative (Attachment 1) will address sample characteristics, analyses requested and general information in performance of the analytical methods. A Data Summary Report (Attachment 2) includes analytical results, a comment report detailing method abnormalities, tentatively identified peaks if applicable, method references, and Laboratory QC information. Copies of the chain of custody and Request for Sample Analysis forms are included as Attachment 3.

## **Analytical Methodology for Requested Analyses**

- ICP-MS Metals by EPA Method 200.8. Analytical work was performed with no deviations to the approved method.
  - Alcohols, Glycols by EPA Method 8015. Analytical work was performed with no deviations to the approved method.
  - ICP-AES Metals by EPA Method 6010. Analytical work was performed with no deviations to the approved method.
  - Anions by EPA Method 300. Analytical work was performed with no deviations to the approved method.
  - VOA by EPA Method 8260A. Analytical work was performed with no deviations to the approved method.
  - Semi-VOA by EPA Method 8270. Analytical work was performed with no deviations to the approved method.
  - Ammonia by EPA Method 300.7. Analytical work was performed with no deviations to the approved method.

- pH by EPA-600 Method 150.1. Analytical work was performed with no deviations to the approved method.
- All RadChem analyses (Gross Alpha/Beta) were run by internal WDOE accredited WSCF procedures. Analytical work was performed with no deviations to the approved method.

### Comments

**ICP-MS Metals** – The hold time for this analysis was met. A Blank, Laboratory Control Sample, Matrix Spike and Matrix Spiked Duplicate were analyzed with each delivery group per the GRP Letter of Instruction. See pages 2-16 through 2-18 for QC details. Analytical Notes:

- Chromium – Sample result flagged C (analyte found in associated blank). The preparation blank contained 0.5 ug/L chromium.
- Antimony – Laboratory Control Sample exceeded established limits. Results were only flagged C (analyte found in associated blank) since all other QC controls were within limits.

All other QC controls are within the established limits.

**Alcohols/Glycols** - The hold times for this analysis were met. A Blank, Laboratory Control Sample, Matrix Spike and Matrix Spiked Duplicate were analyzed with each delivery group per GRP Letter of Instruction. See pages 2-27 for QC details. All QC controls are within the established limits.

**ICP-AES Metals** – The hold times for this analysis was met. A Blank, Laboratory Control Sample, Matrix Spike and Matrix Spiked Duplicate were not analyzed to GRP Letter of Instruction requirements (See note below). See pages 2-28 through 2-32 for QC details.  
Analytical Note:

- The sample was batched with non-GRP sample delivery group 20041357. Matrix Spike and Matrix Spike Duplicate were analyzed on Laboratory Sample ID W04000039 (Water Matrix).

All QC controls are within the established limits.

**Anions** - The hold times for this analysis was met. A Blank, Laboratory Control Sample, Duplicate, Matrix Spike and Matrix Spiked Duplicate were analyzed with each delivery group per GRP Letter of Instruction. See pages 2-13 through 2-14 for QC details. All QC controls are within the established limits.

**VOA** – The hold times for this analysis was met. A Blank, Laboratory Control Sample, Matrix Spike and Matrix Spiked Duplicate were analyzed with each delivery group per the GRP Letter of Instruction. See pages 2-24 through 2-26 for QC details. All QC controls are within the established limits.

**Semi-VOA** – The hold times for this analysis was met. A Blank, Laboratory Control Sample, Matrix Spike and Matrix Spiked Duplicate were analyzed with each delivery group per the GRP Letter of Instruction. See page(s) 2-20 through 2-23 for QC details. Analytical Note:

- Terphenyl-d14 (surrogate) recovery in the Laboratory Control Sample was below established limits. No results were flagged since all other QC controls were within established limits.

**Ammonia** - The hold time for this analysis was met. A Blank, Laboratory Control Sample, Matrix Spike and Matrix Spiked Duplicate were analyzed with each delivery group per GRP Letter of Instruction. See pages 2-19 through for QC details. All QC controls are within the established limits.

**pH** - The hold time for this analysis was met. A Laboratory Control Sample and Duplicate were analyzed with each delivery group per the GRP Letter of Instruction. See page 2-12 for QC details. All QC controls are within the established limits.

**RadChem** – There are no hold times associated with these WDOE accredited methods. A Blank, Laboratory Control Sample and Duplicate were analyzed with each delivery group per the GRP Letter of Instruction. See page 2-15 for QC details. Analytical Note:

- Gross Alpha/Beta - The duplicate Relative Percent Difference was below the established limit. Sample results were not flagged since sample activity was near or below the detection limit and the RPD criterion does not apply to low level samples with high counting error.

All other QC controls are within the established limits.

This Summary Report is in compliance with the SOW, both technically and for completeness. Release of the data contained in this hard copy report has been authorized by the WSCF Laboratory Analytical Manager and Client Services, as verified by the following signature.



Herlene S. Rich  
WSCF Production Control

Abbreviations

Hg – mercury	Am – americium
IC – ion chromatography	Cm - curium
ICP – inductively coupled plasma	Pu – plutonium
ICP/AES – ICP/atomic emission spectroscopy	Np – neptunium
ICP/MS – ICP/mass spectrometry	GEA – gamma energy analysis
Total U – total uranium	H3 – Tritium
AT/TB – total alpha/total beta	Sr – Strontium 89, 90
AEA – Alpha Energy Analysis	WTPH-D – Total Hydrocarbons-Diesel
WTPH-G – Total Hydrocarbons-Gasoline	TSS – Total Suspended Solids

**W1141-SLF-04-236**

**ATTACHMENT 2**

**ANALYTICAL RESULTS**

Consisting of 32 pages  
Not including cover page

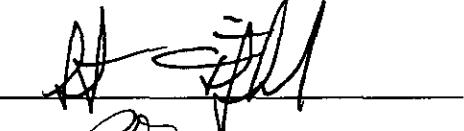
**WSCF**  
**ANALYTICAL RESULTS REPORT**

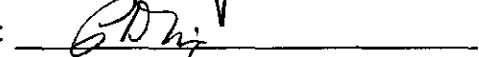
**for**

**Groundwater Remediation Program**

**Richland, WA 99354**

**Attention: Steve Trent**

Analytical: 

Client Services: 

*All results are reported on an "as received" basis unless otherwise noted in the comment section.*

Confidentiality Notice: The information contained in this report is privileged and confidential information intended only for the use of the addressee. If the reader of this report is not the intended recipient, or the employee or agent responsible to deliver it to the intended recipient, you are hereby notified that any dissemination, distribution or copying of this communication is strictly prohibited. If you have received this communication in error, please notify us immediately by telephone at (509) 373-7020.

Contract#: FH-EIS-2003-MEM-001

Report#: WSCF20041342

Report Date: 8-sep-2004

Report WGPP/ver. 1

Groundwater Remediation Program

Page 1

# WSCF

## ANALYTICAL RESULTS REPORT

**Attention:** Steve Trent      **Group #:** WSCF20041342  
**Project:** F03-026: F03-026

Sample #	Client ID	CAS #	Test Performed	Matrix	WSCF Method	RQ	Result	Unit	DF	MDL	Analyze Sample	Receive
<b>Organic</b>												
W040001406	B191D6	TRENT	107-21-1	Ethylene glycol	Organics		< 5.00e+03	ug/L	1.00	5.0e+03	08/16/04	08/03/04
W040001406	B191D6	TRENT	100-02-7	4-Nitrophenol	LA-523-456	U	< 1.40	ug/L	1.00	1.4	08/11/04	08/03/04
W040001406	B191D6	TRENT	106-46-7	1,4-Dichlorobenzene	LA-523-456	U	< 4.90	ug/L	1.00	4.9	08/11/04	08/03/04
W040001406	B191D6	TRENT	108-95-2	Phenol	LA-523-456	U	< 1.70	ug/L	1.00	1.7	08/11/04	08/03/04
W040001406	B191D6	TRENT	120-82-1	1,2,4-Trichlorobenzene	LA-523-456	U	< 2.90	ug/L	1.00	2.9	08/11/04	08/03/04
W040001406	B191D6	TRENT	121-14-2	2,4-Dinitrotoluene	LA-523-456	U	< 1.70	ug/L	1.00	1.7	08/11/04	08/03/04
W040001406	B191D6	TRENT	129-00-0	Pyrene	LA-523-456	U	< 2.00	ug/L	1.00	2.0	08/11/04	08/03/04
W040001406	B191D6	TRENT	59-50-7	4-Chloro-3-methylphenol	LA-523-456	U	< 1.30	ug/L	1.00	1.3	08/11/04	08/03/04
W040001406	B191D6	TRENT	621-64-7	N-Nitrosodi-n-propylamine	LA-523-456	U	< 1.70	ug/L	1.00	1.7	08/11/04	08/03/04
W040001406	B191D6	TRENT	83-32-9	Acenaphthene	LA-523-456	U	< 2.30	ug/L	1.00	2.3	08/11/04	08/03/04
W040001406	B191D6	TRENT	87-88-5	Pentachlorophenol	LA-523-456	U	< 1.70	ug/L	1.00	1.7	08/11/04	08/03/04
W040001406	B191D6	TRENT	95-57-8	2-Chlorophenol	LA-523-456	U	< 1.70	ug/L	1.00	1.7	08/11/04	08/03/04
W040001406	B191D6	TRENT	126-73-8	Tributyl phosphate	LA-523-456	U	< 2.40	ug/L	1.00	2.4	08/11/04	08/03/04
W040001406	B191D6	TRENT	75-35-4	1,1-Dichloroethene	LA-523-455	U	< 1.00	ug/L	1.00	1.0	08/05/04	08/03/04
W040001406	B191D6	TRENT	79-01-6	Trichloroethene	LA-523-455	U	< 1.00	ug/L	1.00	1.0	08/05/04	08/03/04
W040001406	B191D6	TRENT	71-43-2	Benzene	LA-523-455	U	< 1.00	ug/L	1.00	1.0	08/05/04	08/03/04
W040001406	B191D6	TRENT	108-88-3	Toluene	LA-523-455	U	< 1.00	ug/L	1.00	1.0	08/05/04	08/03/04
W040001406	B191D6	TRENT	108-90-7	Chlorobenzene	LA-523-455	U	< 1.00	ug/L	1.00	1.0	08/05/04	08/03/04
W040001406	B191D6	TRENT	75-34-3	1,1-Dichloroethane	LA-523-455	U	< 1.00	ug/L	1.00	1.0	08/05/04	08/03/04
W040001406	B191D6	TRENT	100-41-4	Ethylbenzene	LA-523-455	U	< 1.00	ug/L	1.00	1.0	08/05/04	08/03/04
W040001406	B191D6	TRENT	100-42-5	Styrene	LA-523-455	U	< 1.00	ug/L	1.00	1.0	08/05/04	08/03/04
W040001406	B191D6	TRENT	10061-01-5	cis-1,3-Dichloropropene	LA-523-455	U	< 1.00	ug/L	1.00	1.0	08/05/04	08/03/04
W040001406	B191D6	TRENT	10061-02-6	trans-1,3-Dichloropropene	LA-523-455	U	< 1.00	ug/L	1.00	1.0	08/05/04	08/03/04
W040001406	B191D6	TRENT	107-06-2	1,2-Dichloroethane	LA-523-455	U	< 1.00	ug/L	1.00	1.0	08/05/04	08/03/04
W040001406	B191D6	TRENT	108-10-1	4-Methyl-2-Pentanone	LA-523-455	U	< 1.00	ug/L	1.00	1.0	08/05/04	08/03/04
W040001406	B191D6	TRENT	124-48-1	Dibromochloromethane	LA-523-455	U	< 1.00	ug/L	1.00	1.0	08/05/04	08/03/04

**MDL=Minimum Detection Limit**

C - The Analyte was found in the Associated Blank.

U - Analyzed for but not detected above limiting criteria.

**RQ=Result Qualifier**

**DF=Dilution Factor**

\* - Indicates results that have NOT been validated; + - Indicates more than six qualifier symbols

**Report WGPP/ver. 1**

**Groundwater Remediation Program**

**Page 2**

# WSCF

## ANALYTICAL RESULTS REPORT

**Attention:**  
**Project:**

Steve Trent  
F03-026: F03-026

**Group #:** WSCF20041342

Sample #	Client ID	CAS #	Test Performed	Matrix	WSCF		Unit	DF	MDL	Analyze Sample	Receive
					Method	RQ					
W040001406	B191D6	TRENT	127-18-4	Tetrachloroethene	LA-523-455	U	< 1.00	ug/L	1.00	1.0	08/05/04 08/03/04 08/03/04
W040001406	B191D6	TRENT	1330-20-7	Xylenes (total)	LA-523-455	U	< 1.00	ug/L	1.00	1.0	08/05/04 08/03/04 08/03/04
W040001406	B191D6	TRENT	540-59-0	1,2-Dichloroethene(Total)	LA-523-455	U	< 1.00	ug/L	1.00	1.0	08/05/04 08/03/04 08/03/04
W040001406	B191D6	TRENT	56-23-5	Carbon tetrachloride	LA-523-455	U	< 1.00	ug/L	1.00	1.0	08/05/04 08/03/04 08/03/04
W040001406	B191D6	TRENT	591-78-6	2-Hexanone	LA-523-455	U	< 1.00	ug/L	1.00	1.0	08/05/04 08/03/04 08/03/04
W040001406	B191D6	TRENT	67-64-1	Acetone	LA-523-455	U	< 1.00	ug/L	1.00	1.0	08/05/04 08/03/04 08/03/04
W040001406	B191D6	TRENT	67-66-3	Chloroform	LA-523-455	U	< 1.00	ug/L	1.00	1.0	08/05/04 08/03/04 08/03/04
W040001406	B191D6	TRENT	71-55-6	1,1,1-Trichloroethane	LA-523-455	U	< 1.00	ug/L	1.00	1.0	08/05/04 08/03/04 08/03/04
W040001406	B191D6	TRENT	74-83-9	Bromomethane	LA-523-455	U	< 1.00	ug/L	1.00	1.0	08/05/04 08/03/04 08/03/04
W040001406	B191D6	TRENT	79-34-5	1,1,2,2-Tetrachloroethane	LA-523-455	U	< 1.00	ug/L	1.00	1.0	08/05/04 08/03/04 08/03/04
W040001406	B191D6	TRENT	74-87-3	Chloromethane	LA-523-455	U	< 1.00	ug/L	1.00	1.0	08/05/04 08/03/04 08/03/04
W040001406	B191D6	TRENT	75-00-3	Chloroethane	LA-523-455	U	< 1.00	ug/L	1.00	1.0	08/05/04 08/03/04 08/03/04
W040001406	B191D6	TRENT	75-01-4	Vinyl chloride	LA-523-455	U	< 1.00	ug/L	1.00	1.0	08/05/04 08/03/04 08/03/04
W040001406	B191D6	TRENT	75-09-2	Methylenechloride	LA-523-455	U	< 1.00	ug/L	1.00	1.0	08/05/04 08/03/04 08/03/04
W040001406	B191D6	TRENT	75-15-0	Carbon disulfide	LA-523-455	U	< 1.00	ug/L	1.00	1.0	08/05/04 08/03/04 08/03/04
W040001406	B191D6	TRENT	75-25-2	Bromoform	LA-523-455	U	< 1.00	ug/L	1.00	1.0	08/05/04 08/03/04 08/03/04
W040001406	B191D6	TRENT	75-27-4	Bromodichloromethane	LA-523-455	U	< 1.00	ug/L	1.00	1.0	08/05/04 08/03/04 08/03/04
W040001406	B191D6	TRENT	78-87-5	1,2-Dichloropropane	LA-523-455	U	< 1.00	ug/L	1.00	1.0	08/05/04 08/03/04 08/03/04
W040001406	B191D6	TRENT	78-93-3	2-Butanone	LA-523-455	U	< 1.00	ug/L	1.00	1.0	08/05/04 08/03/04 08/03/04
W040001406	B191D6	TRENT	79-00-5	1,1,2-Trichloroethane	LA-523-455	U	< 1.00	ug/L	1.00	1.0	08/05/04 08/03/04 08/03/04
W040001406	B191D6	TRENT	71-36-3	1-Butanol	LA-523-455	U	< 20.0	ug/L	1.00	20	08/05/04 08/03/04 08/03/04

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C - The Analyte was found in the Associated Blank.

U - Analyzed for but not detected above limiting criteria.

**RQ=Result Qualifier**

**DF=Dilution Factor**

\* - Indicates results that have NOT been validated; + - Indicates more than six qualifier symbols

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**Groundwater Remediation Program**

**Page 3**

# WSCF

## ANALYTICAL RESULTS REPORT

**Attention:**  
**Project:**

Steve Trent  
F03-026: F03-026

**Group #:** WSCF20041342

Sample #	Client ID	CAS #	Test Performed	Matrix	WSCF Method	RQ	Result	Unit	DF	MDL	Analyze Sample	Receive	
<b>Inorganic</b>													
W040001406	B191D6	TRENT	NH4-N	Nitrogen in ammonium	LA-503-401	U	< 4.00e-03	mg/L	1.00	4.0e-03	08/05/04	08/03/04	08/03/04
W040001406	B191D6	TRENT	PH	pH Measurement	LA-212-402		4.38	pH	1.00	0.010	08/03/04	08/03/04	08/03/04
W040001406	B191D6	TRENT	16984-48-8	Fluoride	LA-533-410	U	< 0.0230	mg/L	1.00	0.023	08/03/04	08/03/04	08/03/04
W040001406	B191D6	TRENT	16887-00-6	Chloride	LA-533-410	U	< 0.0520	mg/L	1.00	0.052	08/03/04	08/03/04	08/03/04
W040001406	B191D6	TRENT	NO2-N	Nitrogen in Nitrite	LA-533-410	U	< 0.0190	mg/L	1.00	0.019	08/03/04	08/03/04	08/03/04
W040001406	B191D6	TRENT	24959-67-9	Bromide	LA-533-410	U	< 0.0550	mg/L	1.00	0.055	08/03/04	08/03/04	08/03/04
W040001406	B191D6	TRENT	NO3-N	Nitrogen in Nitrate	LA-533-410	U	< 0.0130	mg/L	1.00	0.013	08/03/04	08/03/04	08/03/04
W040001406	B191D6	TRENT	14265-44-2	Phosphate	LA-533-410	U	< 0.0540	mg/L	1.00	0.054	08/03/04	08/03/04	08/03/04
W040001406	B191D6	TRENT	14808-79-8	Sulfate	LA-533-410	U	< 0.100	mg/L	1.00	0.10	08/03/04	08/03/04	08/03/04
W040001406	B191D6	TRENT	7440-69-9	Bismuth	LA-505-411	U	< 22.0	ug/L	1.00	22	08/23/04	08/03/04	08/03/04
W040001406	B191D6	TRENT	7440-02-0	Nickel	LA-505-412	U	< 0.500	ug/L	1.00	0.50	08/05/04	08/03/04	08/03/04
W040001406	B191D6	TRENT	7440-22-4	Silver	LA-505-412	U	< 0.200	ug/L	1.00	0.20	08/05/04	08/03/04	08/03/04
W040001406	B191D6	TRENT	7440-36-0	Antimony	LA-505-412	C	1.12	ug/L	1.00	0.50	08/05/04	08/03/04	08/03/04
W040001406	B191D6	TRENT	7440-39-3	Barium	LA-505-412	U	< 0.200	ug/L	1.00	0.20	08/05/04	08/03/04	08/03/04
W040001406	B191D6	TRENT	7440-41-7	Beryllium	LA-505-412	U	< 0.300	ug/L	1.00	0.30	08/05/04	08/03/04	08/03/04
W040001406	B191D6	TRENT	7440-47-3	Chromium	LA-505-412	C	0.710	ug/L	1.00	0.30	08/05/04	08/03/04	08/03/04
W040001406	B191D6	TRENT	7440-50-8	Copper	LA-505-412	U	< 0.500	ug/L	1.00	0.50	08/05/04	08/03/04	08/03/04
W040001406	B191D6	TRENT	7439-92-1	Lead	LA-505-412	U	< 1.20	ug/L	1.00	1.2	08/05/04	08/03/04	08/03/04
W040001406	B191D6	TRENT	7440-38-2	Arsenic	LA-505-412	U	< 0.300	ug/L	1.00	0.30	08/05/04	08/03/04	08/03/04
W040001406	B191D6	TRENT	7782-49-2	Selenium	LA-505-412	U	< 0.300	ug/L	1.00	0.30	08/05/04	08/03/04	08/03/04

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C - The Analyte was found in the Associated Blank.

U - Analyzed for but not detected above limiting criteria.

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**DF=Dilution Factor**

\* - Indicates results that have NOT been validated; + - Indicates more than six qualifier symbols

Report WGPP/ver. I

Groundwater Remediation Program

# WSCF

## ANALYTICAL RESULTS REPORT

**Attention:**  
**Project:**

Steve Trent  
F03-026: F03-026

**Group #:** WSCF20041342

Sample #	Client ID	CAS #	Test Performed	Matrix	WSCF Method	RQ	Result	Unit	DF	MDL	Analyze Sample Receive
<b>Radiochemistry</b>											
W040001406	B191D6	TRENT	12587-46-1	Gross alpha	LA-508-415	U	0.520	pCi/L	1.00	0.73	08/05/04 08/03/04 08/03/04
W040001406	B191D6	TRENT	E,T,C	Gross Alpha Method Error	LA-508-415	+/-	0.49	pCi/L	1.00	0.0	08/05/04 08/03/04 08/03/04
W040001406	B191D6	TRENT	12587-47-2	Gross beta	LA-508-415		0.920	pCi/L	1.00	0.80	08/05/04 08/03/04 08/03/04
W040001406	B191D6	TRENT	E,T,C	Gross Beta Method Error	LA-508-415	+/-	0.55	pCi/L	1.00	0.0	08/05/04 08/03/04 08/03/04

**MDL=Minimum Detection Limit**

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*Report WGPP/ver. 1*

*Groundwater Remediation Program*

**WSCF**  
**ANALYTICAL COMMENT REPORT**

**Attention:** Steve Trent  
**Project Number** F03-026

**Group #:** WSCF20041342

Sample #	Client ID	Lab Area	Test	Comment
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		VALGROUP		SVOA: Terphenyl-d14 is out low in the LCS. den
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**Lab Areas:** VALGROUP - Group Validation  
LOGSAMP - Login for Sample

VALTEST - Test Validation  
LOGTEST - Login for Tests

TESTDATA - Test Data Entry

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**WSCF**  
**TENTATIVELY IDENTIFIED PEAK REPORT**

**Attention:** Steve Trent      **Group #:** WSCF20041342  
**Project Number** F03-026 :F03-026

Sample #	Client ID	Test Name	Peak Name	CAS#	RT	RQ	Result	Units
W040001406	B191D6	TRENT	SW-846 8270B Semi-Vols	SMP 10.886 Diethylphthalate	84-66-2	10.8863	7.7	ug/L
W040001406	B191D6	TRENT	SW-846 8270B Semi-Vols	SMP 14.667 Di-n-butylphthalate	84-74-2	14.66721	4.0	ug/L
W040001406	B191D6	TRENT	SW-846 8270B Semi-Vols	SMP 19.715 bis(2-Ethylhexyl)phtha	117-81-7	19.71528	5.5	ug/L

**RQ=Result Qualifier**

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*Groundwater Remediation Program*

WGPPE v 1 Report #: 20041342

Report Date: 3-sep-2004

Page 1

# WSCF

## METHOD REFERENCES REPORT

The results provided in this report were generated using the following WSCF Laboratory procedures. For your convenience, this table provides a listing of the regulatory or industry methods that are referenced by each of these WSCF procedures. Please note that the most recent version of the regulatory or industry method is listed here even though the WSCF procedure may reference an older version of the method. Also, a reference to a regulatory or industry method here does not necessarily indicate a verbatim implementation of that method.

LA-212-402	Determination of pH Direct Measurement EPA SW-846 9040B EPA-600/4-79-020 150.1	pH ELECTROMETRIC MEASUREMENT pH
LA-503-401	LA-503-401: ANALYSIS OF CATIONS BY ION CHROMATOGRAPHY EPA-600/4-86-024 300.7	Dissolved Sodium, Ammonium, Potassium, and Calcium in Wet Deposition by Chemical
LA-505-411	LA-505-411: ELEMENTAL ANALYSIS BY INDUCTIVELY COUPLED PLASMA ATOMIC EMISSION SPE EPA SW-846 6010B	INDUCTIVELY COUPLED PLASMA-ATOMIC EMISSION SPECTROMETRY
LA-505-412	LA-505-412: DETERMINATION OF TRACE ELEMENTS IN WATERS AND WASTES BY INDUCTIVELY EPA-600/R-94-111 200.8	DETERMINATION OF TRACE ELEMENTS IN WATERS AND WASTES BY INDUCTIVELY COUPLED PLAS
LA-508-415	LA-508-415: OPERATION OF THE PROTEAN 2-INCH ALPHA/BETA COUNTING SYSTEM FOR GROSS None	No reference to any industry method.
LA-523-455	LA-523-455: VOLATILE SAMPLE ANALYSIS BY SW-846 EPA SW-846 8000B EPA SW-846 8260B	DETERMINATIVE CHROMATOGRAPHIC SEPARATIONS VOLATILE ORGANIC COMPOUNDS BY GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)
LA-523-456	LA-523-456: SEMIVOLATILE SAMPLE ANALYSIS BY SW-846, METHOD 8270C EPA SW-846 8000B EPA SW-846 8270C	DETERMINATIVE CHROMATOGRAPHIC SEPARATIONS SEMIVOLATILE ORGANIC COMPOUNDS BY GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)
LA-533-410	LA-533-410: ANION ANALYSIS BY ION CHROMATOGRAPHY	

Note: A complete list of WSCF analytical procedures and referenced regulatory or industry methods is available online at <\\ap006\aspdocs\WSCF\Sample Mgmt\ProcedureMethodCrossReference.pdf>. This document includes on-line links to full-text versions of the procedures and methods, where available.

Report Date: 3-sep-2004

Report #: WSCF20041342

Report WGPPM/O

# WSCF

## METHOD REFERENCES REPORT

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The results provided in this report were generated using the following WSCF Laboratory procedures. For your convenience, this table provides a listing of the regulatory or industry methods that are referenced by each of these WSCF procedures. Please note that the most recent version of the regulatory or industry method is listed here even though the WSCF procedure may reference an older version of the method. Also, a reference to a regulatory or industry method here does not necessarily indicate a verbatim implementation of that method.

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**EPA-600/R-94-111 300**

DETERMINATION OF INORGANIC ANIONS BY ION CHROMATOGRAPHY

**Organics**

Organics - Alcohols, Glycols

EPA SW-846 8015B

Nonhalogenated Organics Using GC/FID

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Note: A complete list of WSCF analytical procedures and referenced regulatory or industry methods is available online at  
\\ap006\aspdocs\WSCF\Sample Mgmt\ProcedureMethodCrossReference.pdf. This document includes on-line  
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Report Date: 3-sep-2004

Report #: WSCF20041342

Report WGPPM/O

Page 2

## W13q Worklist/Batch/QC Report for Group# WSCF20041342

WL#	S#	Batch	QC#	Tray	Type	Sample#	Test
22873	4	23238	26413	LCS			pH Direct Measurement
22873	6	23238	26413	DUP		W040001400	pH Direct Measurement
22873	9	23238	26413	SAMPLE		W040001406	pH Direct Measurement
22872	3	23237	26421	BLANK			Anions by Ion Chromatography
22872	11	23237	26421	BLANK			Anions by Ion Chromatography
22872	4	23237	26421	LCS			Anions by Ion Chromatography
22872	10	23237	26421	SAMPLE		W040001406	Anions by Ion Chromatography
22872	6	23237	26421	DUP		W04C000165	Anions by Ion Chromatography
22872	7	23237	26421	MS		W04C000165	Anions by Ion Chromatography
22872	8	23237	26421	MSD		W04C000165	Anions by Ion Chromatography
22885	1	23250	26437	BLANK			Gross Alpha/Gross Beta (AB32)
22885	2	23250	26437	LCS			Gross Alpha/Gross Beta (AB32)
22885	3	23250	26437	DUP		W040001406	Gross Alpha/Gross Beta (AB32)
22885	4	23250	26437	SAMPLE		W040001406	Gross Alpha/Gross Beta (AB32)
22899	1	23264	26440	BLANK			ICP-2008 MS All possible metal
22899	2	23264	26440	LCS			ICP-2008 MS All possible metal
		23264	26440	MS		W040001400	ICP-2008 MS All possible metal
		23264	26440	MSD		W040001400	ICP-2008 MS All possible metal
22899	11	23264	26440	MS		W040001406	ICP-2008 MS All possible metal
22899	12	23264	26440	MSD		W040001406	ICP-2008 MS All possible metal
22899	10	23264	26440	SAMPLE		W040001406	ICP-2008 MS All possible metal
22899	0	23264	26440	SPK-RPD		W040001406	ICP-2008 MS All possible metal
22903	3	23268	26443	BLANK			Ammonia (N) by IC
22903	9	23268	26443	BLANK			Ammonia (N) by IC
22903	1	23268	26443	LCS			Ammonia (N) by IC
22903	5	23268	26443	DUP		W040001406	Ammonia (N) by IC
22903	6	23268	26443	MS		W040001406	Ammonia (N) by IC
22903	7	23268	26443	MSD		W040001406	Ammonia (N) by IC
22903	4	23268	26443	SAMPLE		W040001406	Ammonia (N) by IC
			26515	BLANK			SW-846 8270B Semi-Vols
			26515	LCS			SW-846 8270B Semi-Vols
			26515	MS		W040001406	SW-846 8270B Semi-Vols
			26515	MSD		W040001406	SW-846 8270B Semi-Vols
			26515	SAMPLE		W040001406	SW-846 8270B Semi-Vols
			26515	SPK-RPD		W040001406	SW-846 8270B Semi-Vols
			26515	SURR		W040001406	SW-846 8270B Semi-Vols
23011	7	23375	26607	SAMPLE		W040001406	ICP Metals Analysis, Grd H2O P
			26670	BLANK			VOA Ground Water Protection
			26670	LCS			VOA Ground Water Protection
			26670	MS		W040001406	VOA Ground Water Protection
			26670	MSD		W040001406	VOA Ground Water Protection
			26670	SAMPLE		W040001406	VOA Ground Water Protection
			26670	SPK-RPD		W040001406	VOA Ground Water Protection
			26670	SURR		W040001406	VOA Ground Water Protection
23129	1	23495	26689	BLANK			Alcohols, Glycols - 8015
23129	2	23495	26689	LCS			Alcohols, Glycols - 8015

23129	4	23495	26689	DUP	W040001406	Alcohols, Glycols - 8015
23129	5	23495	26689	MS	W040001406	Alcohols, Glycols - 8015
23129	6	23495	26689	MSD	W040001406	Alcohols, Glycols - 8015
23129	3	23495	26689	SAMPLE	W040001406	Alcohols, Glycols - 8015
23129	6	23495	26689	SPK-RPD	W040001406	Alcohols, Glycols - 8015

# WSCF ANALYTICAL LABORATORY QC REPORT

SDG Number: WSCF20041342  
 Matrix: WATER  
 Test: pH Direct Measurement

SAF Number: F03-026  
 Sample Date: 08/03/04  
 Receive Date: 08/03/04

QC Type	Analyte	CAS #	QC Found	QC Yield	Units	Analysis Date	Lower Limit	Upper Limit	RQ
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Lab ID: W040001400

## BATCH QC ASSOCIATED WITH SAMPLE

DUP	pH Direct Measurement	PH	7.907	0.076	RPD	08/03/04	0.000	20.000	
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## BATCH QC

LCS	pH Direct Measurement	PH	7.957	0.995	Ratio	08/03/04	0.900	1.100	
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# WSCF ANALYTICAL LABORATORY QC REPORT

SDG Number: WSCF20041342

Matrix: WATER

Test: Anions by Ion Chromatography

SAF Number: F03-026

Sample Date: 08/02/04

Receive Date: 08/03/04

QC Type	Analyte	CAS #	QC Found	QC Yield	Units	Analysis Date	Lower Limit	Upper Limit	RQ
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Lab ID: W04C000165

## BATCH QC ASSOCIATED WITH SAMPLE

DUP	Bromide	24959-67-9	<5.50e-2	n/a	RPD	08/03/04	0.000	20.000	U
DUP	Chloride	16887-00-6	<5.20e-2	n/a	RPD	08/03/04	0.000	20.000	U
DUP	Fluoride	16984-48-8	<2.30e-2	n/a	RPD	08/03/04	0.000	20.000	U
DUP	Nitrogen in Nitrite	NO2-N	<1.90e-2	n/a	RPD	08/03/04	0.000	20.000	U
DUP	Nitrogen in Nitrate	NO3-N	<1.30e-2	n/a	RPD	08/03/04	0.000	20.000	U
DUP	Phosphate	14265-44-2	<5.40e-2	n/a	RPD	08/03/04	0.000	20.000	U
DUP	Sulfate	14808-79-8	<1.00e-1	n/a	RPD	08/03/04	0.000	20.000	U
MS	Bromide	24959-67-9	2.06e+00	103.518	% Recov	08/03/04	75.000	125.000	
MS	Chloride	16887-00-6	1.09e+00	110.101	% Recov	08/03/04	75.000	125.000	
MS	Fluoride	16984-48-8	4.95e-01	101.227	% Recov	08/03/04	75.000	125.000	
MS	Nitrogen in Nitrite	NO2-N	5.44e-01	107.937	% Recov	08/03/04	75.000	125.000	
MS	Nitrogen in Nitrate	NO3-N	4.61e-01	103.363	% Recov	08/03/04	75.000	125.000	
MS	Phosphate	14265-44-2	1.04e+00	108.446	% Recov	08/03/04	75.000	125.000	
MS	Sulfate	14808-79-8	2.04e+00	103.553	% Recov	08/03/04	75.000	125.000	
MSD	Bromide	24959-67-9	1.93e+00	96.985	% Recov	08/03/04	75.000	125.000	
MSD	Chloride	16887-00-6	9.91e-01	100.101	% Recov	08/03/04	75.000	125.000	
MSD	Fluoride	16984-48-8	4.48e-01	91.616	% Recov	08/03/04	75.000	125.000	
MSD	Nitrogen in Nitrite	NO2-N	4.87e-01	96.627	% Recov	08/03/04	75.000	125.000	
MSD	Nitrogen in Nitrate	NO3-N	4.25e-01	95.291	% Recov	08/03/04	75.000	125.000	
MSD	Phosphate	14265-44-2	9.33e-01	97.289	% Recov	08/03/04	75.000	125.000	
MSD	Sulfate	14808-79-8	1.81e+00	91.878	% Recov	08/03/04	75.000	125.000	

## BATCH QC

BLANK	Bromide	24959-67-9	<5.50e-2	n/a	mg/L	08/03/04	0.000	300.000	U
BLANK	Bromide	24959-67-9	<5.50e-2	n/a	mg/L	08/03/04	0.000	300.000	U
BLANK	Chloride	16887-00-6	<5.20e-2	n/a	mg/L	08/03/04	0.000	300.000	U

# WSCF ANALYTICAL LABORATORY QC REPORT

SDG Number: WSCF20041342

Matrix: WATER

Test: Anions by Ion Chromatography

SAF Number: F03-026

Sample Date:

Receive Date:

QC Type	Analyte	CAS #	QC Found	QC Yield	Units	Analysis Date	Lower Limit	Upper Limit	RQ
BLANK	Chloride	16887-00-6	<5.20e-2	n/a	mg/L	08/03/04	0.000	300.000	U
BLANK	Fluoride	16984-48-8	<2.30e-2	n/a	mg/L	08/03/04	0.000	300.000	U
BLANK	Fluoride	16984-48-8	<2.30e-2	n/a	mg/L	08/03/04	0.000	300.000	U
BLANK	Nitrogen in Nitrite	NO2-N	<1.90e-2	n/a	mg/L	08/03/04	0.000	300.000	U
BLANK	Nitrogen in Nitrite	NO2-N	<1.90e-2	n/a	mg/L	08/03/04	0.000	300.000	U
BLANK	Nitrogen in Nitrate	NO3-N	<1.30e-2	n/a	mg/L	08/03/04	0.000	300.000	U
BLANK	Nitrogen in Nitrate	NO3-N	<1.30e-2	n/a	mg/L	08/03/04	0.000	300.000	U
BLANK	Phosphate	14265-44-2	<5.40e-2	n/a	mg/L	08/03/04	0.000	300.000	U
BLANK	Phosphate	14265-44-2	<5.40e-2	n/a	mg/L	08/03/04	0.000	300.000	U
BLANK	Sulfate	14808-79-8	<1.00e-1	n/a	mg/L	08/03/04	0.000	300.000	U
BLANK	Sulfate	14808-79-8	<1.00e-1	n/a	mg/L	08/03/04	0.000	300.000	U
LCS	Bromide	24959-67-9	3.78e+02	94.264	% Recov	08/03/04	80.000	120.000	
LCS	Chloride	16887-00-6	2.05e+02	102.500	% Recov	08/03/04	80.000	120.000	
LCS	Fluoride	16984-48-8	9.06e+01	91.793	% Recov	08/03/04	80.000	120.000	
LCS	Nitrogen in Nitrite	NO2-N	1.01e+02	101.000	% Recov	08/03/04	80.000	120.000	
LCS	Nitrogen in Nitrate	NO3-N	8.51e+01	94.451	% Recov	08/03/04	80.000	120.000	
LCS	Phosphate	14265-44-2	1.83e+02	94.427	% Recov	08/03/04	80.000	120.000	
LCS	Sulfate	14808-79-8	3.74e+02	93.734	% Recov	08/03/04	80.000	120.000	

# WSCF ANALYTICAL LABORATORY QC REPORT

SDG Number: WSCF20041342

Matrix: WATER

Test: Gross Alpha/Gross Beta (AB32)

SAF Number: F03-026

Sample Date: 08/03/04

Receive Date: 08/03/04

QC Type	Analyte	CAS #	QC Found	QC Yield	Units	Analysis Date	Lower Limit	Upper Limit	RQ
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Lab ID: W040001406

## BATCH QC ASSOCIATED WITH SAMPLE

DUP	Gross alpha	12587-46-1	6.9e-01	28.099	RPD	08/05/04	0.000	20.000	*
DUP	Gross beta	12587-47-2	4.8e-01	62.857	RPD	08/05/04	0.000	20.000	*

## BATCH QC

BLANK	Gross alpha	12587-46-1	-1.7e-01	-0.170	pCi/L	08/05/04	-10.000	10.000	
BLANK	Gross beta	12587-47-2	3.1e-01	0.310	pCi/L	08/05/04	-10.000	10.000	
LCS	Gross alpha	12587-46-1	36.4	100.082	%rec	08/05/04	75.000	125.000	
LCS	Gross beta	12587-47-2	97.7	95.803	%rec	08/05/04	75.000	125.000	

# WSCF ANALYTICAL LABORATORY QC REPORT

SDG Number: WSCF20041342

Matrix: WATER

Test: ICP-2008 MS All possible metal

SAF Number: F03-026

Sample Date: 08/03/04

Receive Date: 08/03/04

QC Type	Analyte	CAS #	QC Found	QC Yield	Units	Analysis Date	Lower Limit	Upper Limit	RQ
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Lab ID: W040001400

## BATCH QC ASSOCIATED WITH SAMPLE

MS	Arsenic	7440-38-2	33.15	82.875	% Recov	08/05/04	70.000	130.000	
MS	Chromium	7440-47-3	37.4	93.500	% Recov	08/05/04	70.000	130.000	
MS	Copper	7440-50-8	34.76	86.900	% Recov	08/05/04	70.000	130.000	
MS	Lead	7439-92-1	37.67	94.175	% Recov	08/05/04	70.000	130.000	
MS	Selenium	7782-49-2	29.54	73.850	% Recov	08/05/04	70.000	130.000	
MSD	Arsenic	7440-38-2	45.04	112.600	% Recov	08/05/04	70.000	130.000	
MSD	Chromium	7440-47-3	47.8	119.500	% Recov	08/05/04	70.000	130.000	
MSD	Copper	7440-50-8	46.81	117.025	% Recov	08/05/04	70.000	130.000	
MSD	Lead	7439-92-1	49.31	123.275	% Recov	08/05/04	70.000	130.000	
MSD	Selenium	7782-49-2	38.18	95.450	% Recov	08/05/04	70.000	130.000	

Lab ID: W040001406

## BATCH QC ASSOCIATED WITH SAMPLE

MS	Silver	7440-22-4	39.59	98.975	% Recov	08/05/04	70.000	130.000	
MS	Arsenic	7440-38-2	37.35	93.375	% Recov	08/05/04	70.000	130.000	
MS	Barium	7440-39-3	40.32	100.800	% Recov	08/05/04	70.000	130.000	
MS	Beryllium	7440-41-7	38.44	96.100	% Recov	08/05/04	70.000	130.000	
MS	Chromium	7440-47-3	39.18	97.950	% Recov	08/05/04	70.000	130.000	
MS	Copper	7440-50-8	39.6	99.000	% Recov	08/05/04	70.000	130.000	
MS	Nickel	7440-02-0	40.46	101.150	% Recov	08/05/04	70.000	130.000	
MS	Lead	7439-92-1	40.12	100.300	% Recov	08/05/04	70.000	130.000	
MS	Antimony	7440-36-0	43.48	108.700	% Recov	08/05/04	70.000	130.000	
MS	Selenium	7782-49-2	33.63	84.075	% Recov	08/05/04	70.000	130.000	
MSD	Silver	7440-22-4	37.92	94.800	% Recov	08/05/04	70.000	130.000	
MSD	Arsenic	7440-38-2	36.14	90.350	% Recov	08/05/04	70.000	130.000	
MSD	Barium	7440-39-3	39.19	97.975	% Recov	08/05/04	70.000	130.000	

# WSCF ANALYTICAL LABORATORY QC REPORT

SDG Number: WSCF20041342

Matrix: WATER

Test: ICP-2008 MS All possible metal

SAF Number: F03-026

Sample Date: 08/03/04

Receive Date: 08/03/04

QC Type	Analyte	CAS #	QC Found	QC Yield	Units	Analysis Date	Lower Limit	Upper Limit	RQ
MSD	Beryllium	7440-41-7	37.74	94.350	% Recov	08/05/04	70.000	130.000	
MSD	Chromium	7440-47-3	38.76	96.900	% Recov	08/05/04	70.000	130.000	
MSD	Copper	7440-50-8	37.81	94.525	% Recov	08/05/04	70.000	130.000	
MSD	Nickel	7440-02-0	38.51	96.275	% Recov	08/05/04	70.000	130.000	
MSD	Lead	7439-92-1	38.55	96.375	% Recov	08/05/04	70.000	130.000	
MSD	Antimony	7440-36-0	41.07	102.675	% Recov	08/05/04	70.000	130.000	
MSD	Selenium	7782-49-2	32.47	81.175	% Recov	08/05/04	70.000	130.000	
SPK-RPD	Silver	7440-22-4	94.800	4.309	RPD	08/05/04	0.000	20.000	
SPK-RPD	Arsenic	7440-38-2	90.350	3.293	RPD	08/05/04	0.000	20.000	
SPK-RPD	Barium	7440-39-3	97.975	2.842	RPD	08/05/04	0.000	20.000	
SPK-RPD	Beryllium	7440-41-7	94.350	1.838	RPD	08/05/04	0.000	20.000	
SPK-RPD	Chromium	7440-47-3	96.900	1.078	RPD	08/05/04	0.000	20.000	
SPK-RPD	Copper	7440-50-8	94.525	4.625	RPD	08/05/04	0.000	20.000	
SPK-RPD	Nickel	7440-02-0	96.275	4.939	RPD	08/05/04	0.000	20.000	
SPK-RPD	Lead	7439-92-1	96.375	3.991	RPD	08/05/04	0.000	20.000	
SPK-RPD	Antimony	7440-36-0	102.675	5.701	RPD	08/05/04	0.000	20.000	
SPK-RPD	Selenium	7782-49-2	81.175	3.510	RPD	08/05/04	0.000	20.000	

## BATCH QC

BLANK	Silver	7440-22-4	<0.2	n/a	ug/L	08/05/04	-0.440	0.440	U
BLANK	Arsenic	7440-38-2	<0.3	n/a	ug/L	08/05/04	-0.660	0.660	U
BLANK	Barium	7440-39-3	<0.2	n/a	ug/L	08/05/04	-0.440	0.440	U
BLANK	Beryllium	7440-41-7	<0.3	n/a	ug/L	08/05/04	-0.660	0.660	U
BLANK	Chromium	7440-47-3	0.5	0.500	ug/L	08/05/04	-0.660	0.660	
BLANK	Copper	7440-50-8	<0.5	n/a	ug/L	08/05/04	-1.100	1.100	U
BLANK	Nickel	7440-02-0	<0.5	n/a	ug/L	08/05/04	-1.100	1.100	U
BLANK	Lead	7439-92-1	<1.2	n/a	ug/L	08/05/04	-2.640	2.640	U
BLANK	Antimony	7440-36-0	1.93	1.930	ug/L	08/05/04	-1.100	1.100	
BLANK	Selenium	7782-49-2	<0.3	n/a	ug/L	08/05/04	-0.660	0.660	U
LCS	Silver	7440-22-4	42.54	106.350	% Recov	08/05/04	85.000	115.000	

# WSCF ANALYTICAL LABORATORY QC REPORT

SDG Number: WSCF20041342

Matrix: WATER

Test: ICP-2008 MS All possible metal

SAF Number: F03-026

Sample Date:

Receive Date:

QC Type	Analyte	CAS #	QC Found	QC Yield	Units	Analysis Date	Lower Limit	Upper Limit	RQ
LCS	Arsenic	7440-38-2	38.32	95.800	% Recov	08/05/04	85.000	115.000	
LCS	Barium	7440-39-3	43.64	109.100	% Recov	08/05/04	85.000	115.000	
LCS	Beryllium	7440-41-7	40.38	100.950	% Recov	08/05/04	85.000	115.000	
LCS	Chromium	7440-47-3	43.28	108.200	% Recov	08/05/04	85.000	115.000	
LCS	Copper	7440-50-8	42.22	105.550	% Recov	08/05/04	85.000	115.000	
LCS	Nickel	7440-02-0	41.87	104.675	% Recov	08/05/04	85.000	115.000	
LCS	Lead	7439-92-1	43.08	107.700	% Recov	08/05/04	85.000	115.000	
LCS	Antimony	7440-36-0	49.48	123.700	% Recov	08/05/04	85.000	115.000	
LCS	Selenium	7782-49-2	35.87	89.675	% Recov	08/05/04	85.000	115.000	

# WSCF ANALYTICAL LABORATORY QC REPORT

SDG Number: WSCF20041342  
 Matrix: WATER  
 Test: Ammonia (N) by IC

SAF Number: F03-026  
 Sample Date: 08/03/04  
 Receive Date: 08/03/04

QC Type	Analyte	CAS #	QC Found	QC Yield	Units	Analysis Date	Lower Limit	Upper Limit	RQ
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Lab ID: W040001406

## BATCH QC ASSOCIATED WITH SAMPLE

DUP	Ammonia (N) by IC	7664-41-7	<4.00e-3	n/a	RPD	08/05/04	0.000	20.000	U
MS	Ammonia (N) by IC	7664-41-7	1.62e-01	98.780	% Recov	08/05/04	75.000	125.000	
MSD	Ammonia (N) by IC	7664-41-7	1.69e-01	103.049	% Recov	08/05/04	75.000	125.000	

## BATCH QC

BLANK	Ammonia (N) by IC	7664-41-7	<4.00e-3	n/a	mg/L	08/05/04	0.000	30.000	U
BLANK	Ammonia (N) by IC	7664-41-7	<4.00e-3	n/a	mg/L	08/05/04	0.000	30.000	U
LCS	Ammonia (N) by IC	7664-41-7	8.43e+01	102.555	% Recov	08/05/04	80.000	120.000	

# WSCF ANALYTICAL LABORATORY QC REPORT

SDG Number: WSCF20041342  
 Matrix: WATER  
 Test: SW-846 8270B Semi-Vols

SAF Number: F03-026  
 Sample Date: 08/03/04  
 Receive Date: 08/03/04

QC Type	Analyte	CAS #	QC Found	QC Yield	Units	Analysis Date	Lower Limit	Upper Limit	RQ
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Lab ID: W040001406

## BATCH QC ASSOCIATED WITH SAMPLE

MS	1,2,4-Trichlorobenzene	120-82-1	38.444	79.200	% Recov	08/11/04	50.000	120.000	
MS	1,4-Dichlorobenzene	106-46-7	40.740	83.900	% Recov	08/11/04	41.000	113.000	
MS	2,4-Dinitrotoluene	121-14-2	37.847	78.000	% Recov	08/11/04	65.000	109.000	
MS	2-Fluorophenol	367-12-4	40.930	84.300	% Recov	08/11/04	50.000	110.000	
MS	Acenaphthene	83-32-9	40.716	83.900	% Recov	08/11/04	62.000	112.000	
MS	4-Chloro-3-methylphenol	59-50-7	55.952	76.800	% Recov	08/11/04	59.000	115.000	
MS	2-Chlorophenol	95-57-8	62.507	85.800	% Recov	08/11/04	69.000	111.000	
MS	N-Nitrosodi-n-dipropylamine	621-64-7	48.898	101.000	% Recov	08/11/04	69.000	115.000	
MS	2-Fluorobiphenyl	321-60-8	42.612	87.800	% Recov	08/11/04	58.000	109.000	
MS	Phenol	108-95-2	58.213	79.900	% Recov	08/11/04	59.000	115.000	
MS	Nitrobenzene-d5	4165-60-0	39.017	80.400	% Recov	08/11/04	60.000	118.000	
MS	4-Nitrophenol	100-02-7	60.813	83.500	% Recov	08/11/04	32.000	130.000	
MS	Pentachlorophenol	87-86-5	56.540	77.600	% Recov	08/11/04	51.000	121.000	
MS	Phenol-d5	4165-62-2	43.679	90.000	% Recov	08/11/04	59.000	116.000	
MS	Pyrene	129-00-0	36.748	75.700	% Recov	08/11/04	58.000	116.000	
MS	2,4,6-Tribromophenol	118-79-6	41.173	84.800	% Recov	08/11/04	60.000	120.000	
MS	Terphenyl-d14 (7Cl)	98904-43-9	36.402	75.000	% Recov	08/11/04	60.000	120.000	
MSD	1,2,4-Trichlorobenzene	120-82-1	42.359	87.300	% Recov	08/11/04	50.000	120.000	
MSD	1,4-Dichlorobenzene	106-46-7	38.825	80.000	% Recov	08/11/04	41.000	113.000	
MSD	2,4-Dinitrotoluene	121-14-2	39.179	80.700	% Recov	08/11/04	65.000	109.000	
MSD	2-Fluorophenol	367-12-4	43.026	88.600	% Recov	08/11/04	50.000	110.000	
MSD	Acenaphthene	83-32-9	41.445	85.400	% Recov	08/11/04	62.000	112.000	
MSD	4-Chloro-3-methylphenol	59-50-7	63.422	87.100	% Recov	08/11/04	59.000	115.000	
MSD	2-Chlorophenol	95-57-8	61.994	85.100	% Recov	08/11/04	69.000	111.000	
MSD	N-Nitrosodi-n-dipropylamine	621-64-7	43.836	90.300	% Recov	08/11/04	69.000	115.000	
MSD	2-Fluorobiphenyl	321-60-8	43.790	90.200	% Recov	08/11/04	58.000	109.000	

# WSCF ANALYTICAL LABORATORY QC REPORT

SDG Number: WSCF20041342

Matrix: WATER

Test: SW-846 8270B Semi-Vols

SAF Number: F03-026

Sample Date: 08/03/04

Receive Date: 08/03/04

QC Type	Analyte	CAS #	QC Found	QC Yield	Units	Analysis Date	Lower Limit	Upper Limit	RQ
MSD	Phenol	108-95-2	63.659	87.400	% Recov	08/11/04	59.000	115.000	
MSD	Nitrobenzene-d5	4165-60-0	45.444	93.600	% Recov	08/11/04	60.000	118.000	
MSD	4-Nitrophenol	100-02-7	55.511	76.200	% Recov	08/11/04	32.000	130.000	
MSD	Pentachlorophenol	87-86-5	54.076	74.300	% Recov	08/11/04	51.000	121.000	
MSD	Phenol-d5	4165-62-2	42.596	87.700	% Recov	08/11/04	59.000	116.000	
MSD	Pyrene	129-00-0	36.625	75.400	% Recov	08/11/04	58.000	116.000	
MSD	2,4,6-Tribromophenol	118-79-6	45.244	93.200	% Recov	08/11/04	60.000	120.000	
MSD	Terphenyl-d14 (7Cl)	98904-43-9	39.004	80.300	% Recov	08/11/04	60.000	120.000	
SPK-RPD	1,2,4-Trichlorobenzene	120-82-1	87.300	9.730	RPD	08/11/04	0.000	25.000	
SPK-RPD	1,4-Dichlorobenzene	106-46-7	80.000	4.759	RPD	08/11/04	0.000	25.000	
SPK-RPD	2,4-Dinitrotoluene	121-14-2	80.700	3.403	RPD	08/11/04	0.000	25.000	
SPK-RPD	2-Fluorophenol	367-12-4	88.600	4.974	RPD	08/11/04	0.000	25.000	
SPK-RPD	Acenaphthene	83-32-9	85.400	1.772	RPD	08/11/04	0.000	25.000	
SPK-RPD	4-Chloro-3-methylphenol	59-50-7	87.100	12.569	RPD	08/11/04	0.000	25.000	
SPK-RPD	2-Chlorophenol	95-57-8	85.100	0.819	RPD	08/11/04	0.000	25.000	
SPK-RPD	N-Nitrosodi-n-dipropylamine	621-64-7	90.300	11.187	RPD	08/11/04	0.000	25.000	
SPK-RPD	2-Fluorobiphenyl	321-60-8	90.200	2.697	RPD	08/11/04	0.000	25.000	
SPK-RPD	Phenol	108-95-2	87.400	8.966	RPD	08/11/04	0.000	16.000	
SPK-RPD	Nitrobenzene-d5	4165-60-0	93.600	15.172	RPD	08/11/04	0.000	26.000	
SPK-RPD	4-Nitrophenol	100-02-7	76.200	9.142	RPD	08/11/04	0.000	25.000	
SPK-RPD	Pentachlorophenol	87-86-5	74.300	4.345	RPD	08/11/04	0.000	25.000	
SPK-RPD	Phenol-d5	4165-62-2	87.700	2.589	RPD	08/11/04	0.000	25.000	
SPK-RPD	Pyrene	129-00-0	75.400	0.397	RPD	08/11/04	0.000	25.000	
SPK-RPD	2,4,6-Tribromophenol	118-79-6	93.200	9.438	RPD	08/11/04	0.000	25.000	
SPK-RPD	Terphenyl-d14 (7Cl)	98904-43-9	80.300	6.825	RPD	08/11/04	0.000	25.000	
SURR	2-Fluorophenol	367-12-4	37.619	77.500	% Recov	08/11/04	50.000	110.000	
SURR	2-Fluorobiphenyl	321-60-8	44.771	92.200	% Recov	08/11/04	58.000	109.000	
SURR	Nitrobenzene-d5	4165-60-0	44.238	91.100	% Recov	08/11/04	60.000	118.000	
SURR	Phenol-d5	4165-62-2	41.970	86.500	% Recov	08/11/04	59.000	116.000	
SURR	2,4,6-Tribromophenol	118-79-6	41.048	84.600	% Recov	08/11/04	60.000	120.000	

# WSCF ANALYTICAL LABORATORY QC REPORT

SDG Number: WSCF20041342  
 Matrix: WATER  
 Test: SW-846 8270B Semi-Vols

SAF Number: F03-026  
 Sample Date: 08/03/04  
 Receive Date: 08/03/04

QC Type	Analyte	CAS #	QC Found	QC Yield	Units	Analysis Date	Lower Limit	Upper Limit	RQ
SURR	Terphenyl-d14 (7Cl)	98904-43-9	36.879	76.000	% Recov	08/11/04	60.000	120.000	
<b>BATCH QC</b>									
BLANK	1,2,4-Trichlorobenzene	120-82-1	< 3.0	n/a	ug/L	08/11/04			U
BLANK	1,4-Dichlorobenzene	106-46-7	< 5.0	n/a	ug/L	08/11/04			U
BLANK	2,4-Dinitrotoluene	121-14-2	< 1.8	n/a	ug/L	08/11/04			U
BLANK	2-Fluorophenol	367-12-4	41.851	83.700	% Recov	08/11/04	50.000	110.000	
BLANK	Acenaphthene	83-32-9	< 2.4	n/a	ug/L	08/11/04			U
BLANK	4-Chloro-3-methylphenol	59-50-7	< 1.3	n/a	ug/L	08/11/04			U
BLANK	2-Chlorophenol	95-57-8	< 1.7	n/a	ug/L	08/11/04			U
BLANK	N-Nitrosodi-n-dipropylamine	621-64-7	< 1.7	n/a	ug/L	08/11/04			U
BLANK	2-Fluorobiphenyl	321-60-8	49.498	99.000	% Recov	08/11/04	58.000	109.000	
BLANK	Phenol	108-95-2	< 1.7	n/a	ug/L	08/11/04			U
BLANK	Nitrobenzene-d5	4165-60-0	44.493	89.000	% Recov	08/11/04	60.000	118.000	
BLANK	4-Nitrophenol	100-02-7	< 1.4	n/a	ug/L	08/11/04			U
BLANK	Pentachlorophenol	87-86-5	< 1.7	n/a	ug/L	08/11/04			U
BLANK	Phenol-d5	4165-62-2	40.751	81.500	% Recov	08/11/04	59.000	116.000	
BLANK	Pyrene	129-00-0	< 2.1	n/a	ug/L	08/11/04			U
BLANK	Tributyl phosphate	126-73-8	< 2.5	n/a	ug/L	08/11/04			U
BLANK	2,4,6-Tribromophenol	118-79-6	38.113	76.200	% Recov	08/11/04	60.000	120.000	
BLANK	Terphenyl-d14 (7Cl)	98904-43-9	40.399	80.800	% Recov	08/11/04	60.000	120.000	
LCS	1,2,4-Trichlorobenzene	120-82-1	42.078	84.200	% Recov	08/11/04	46.000	107.000	
LCS	1,4-Dichlorobenzene	106-46-7	40.033	80.100	% Recov	08/11/04	42.000	111.000	
LCS	2,4-Dinitrotoluene	121-14-2	38.487	77.000	% Recov	08/11/04	59.000	106.000	
LCS	2-Fluorophenol	367-12-4	41.461	82.900	% Recov	08/11/04	50.000	110.000	
LCS	Acenaphthene	83-32-9	42.155	84.300	% Recov	08/11/04	61.000	116.000	
LCS	4-Chloro-3-methylphenol	59-50-7	62.082	82.800	% Recov	08/11/04	61.000	106.000	
LCS	2-Chlorophenol	95-57-8	61.490	82.000	% Recov	08/11/04	66.000	106.000	
LCS	N-Nitrosodi-n-dipropylamine	621-64-7	41.463	82.900	% Recov	08/11/04	71.000	114.000	
LCS	2-Fluorobiphenyl	321-60-8	44.461	88.900	% Recov	08/11/04	58.000	109.000	

# WSCF ANALYTICAL LABORATORY QC REPORT

SDG Number: WSCF20041342  
 Matrix: WATER  
 Test: SW-846 8270B Semi-Vols

SAF Number: F03-026  
 Sample Date:  
 Receive Date:

QC Type	Analyte	CAS #	QC Found	QC Yield	Units	Analysis Date	Lower Limit	Upper Limit	RQ
LCS	Phenol	108-95-2	60.606	80.800	% Recov	08/11/04	67.000	105.000	
LCS	Nitrobenzene-d5	4165-60-0	42.697	85.400	% Recov	08/11/04	60.000	118.000	
LCS	4-Nitrophenol	100-02-7	48.035	64.000	% Recov	08/11/04	32.000	118.000	
LCS	Pentachlorophenol	87-86-5	52.046	69.400	% Recov	08/11/04	62.000	114.000	
LCS	Phenol-d5	4165-62-2	42.292	84.600	% Recov	08/11/04	59.000	116.000	
LCS	Pyrene	129-00-0	36.765	73.500	% Recov	08/11/04	66.000	118.000	
LCS	2,4,6-Tribromophenol	118-79-6	41.800	83.600	% Recov	08/11/04	60.000	120.000	
LCS	Terphenyl-d14 (7Cl)	98904-43-9	27.079	54.200	% Recov	08/11/04	60.000	120.000	

# WSCF ANALYTICAL LABORATORY QC REPORT

SDG Number: WSCF20041342

Matrix: WATER

Test: VOA Ground Water Protection

SAF Number: F03-026

Sample Date: 08/03/04

Receive Date: 08/03/04

QC Type	Analyte	CAS #	QC Found	QC Yield	Units	Analysis Date	Lower Limit	Upper Limit	RQ
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Lab ID: W040001406

## BATCH QC ASSOCIATED WITH SAMPLE

MS	1,1-Dichloroethane	75-35-4	23.800	95.200	% Recov	08/05/04	63.000	117.000	
MS	Benzene	71-43-2	27.330	109.000	% Recov	08/05/04	75.000	129.000	
MS	4-Bromofluorobenzene	460-00-4	51.290	103.000	% Recov	08/05/04	84.000	116.000	
MS	Chlorobenzene	108-90-7	28.230	113.000	% Recov	08/05/04	79.000	119.000	
MS	1,2-Dichloroethane-d4	17060-07-0	57.780	116.000	% Recov	08/05/04	82.000	136.000	
MS	Toluene-d8	2037-26-5	56.510	113.000	% Recov	08/05/04	89.000	119.000	
MS	Toluene	108-88-3	28.130	113.000	% Recov	08/05/04	76.000	120.000	
MS	Trichloroethene	79-01-6	26.650	107.000	% Recov	08/05/04	73.000	123.000	
MSD	1,1-Dichloroethane	75-35-4	23.750	95.000	% Recov	08/05/04	63.000	117.000	
MSD	Benzene	71-43-2	27.530	110.000	% Recov	08/05/04	75.000	129.000	
MSD	4-Bromofluorobenzene	460-00-4	49.480	99.000	% Recov	08/05/04	84.000	116.000	
MSD	Chlorobenzene	108-90-7	27.630	111.000	% Recov	08/05/04	79.000	119.000	
MSD	1,2-Dichloroethane-d4	17060-07-0	59.530	119.000	% Recov	08/05/04	82.000	136.000	
MSD	Toluene-d8	2037-26-5	56.330	113.000	% Recov	08/05/04	89.000	119.000	
MSD	Toluene	108-88-3	27.400	110.000	% Recov	08/05/04	76.000	120.000	
MSD	Trichloroethene	79-01-6	27.140	109.000	% Recov	08/05/04	73.000	123.000	
SPK-RPD	1,1-Dichloroethane	75-35-4	95.000	0.210	RPD	08/05/04	0.000	10.000	
SPK-RPD	Benzene	71-43-2	110.000	0.913	RPD	08/05/04	0.000	10.000	
SPK-RPD	Chlorobenzene	108-90-7	111.000	1.786	RPD	08/05/04	0.000	10.000	
SPK-RPD	1,2-Dichloroethane-d4	17060-07-0	119.000	2.553	RPD	08/05/04	0.000	25.000	
SPK-RPD	Toluene-d8	2037-26-5	113.000	0.000	RPD	08/05/04	0.000	25.000	
SPK-RPD	Toluene	108-88-3	110.000	2.691	RPD	08/05/04	0.000	10.000	
SPK-RPD	Trichloroethene	79-01-6	109.000	1.852	RPD	08/05/04	0.000	10.000	
SURR	4-Bromofluorobenzene	460-00-4	48.720	97.400	% Recov	08/05/04	84.000	116.000	
SURR	1,2-Dichloroethane-d4	17060-07-0	57.820	116.000	% Recov	08/05/04	82.000	136.000	
SURR	Toluene-d8	2037-26-5	57.450	115.000	% Recov	08/05/04	89.000	119.000	

# WSCF ANALYTICAL LABORATORY QC REPORT

SDG Number: WSCF20041342

Matrix: WATER

Test: VOA Ground Water Protection

SAF Number: F03-026

Sample Date: 08/03/04

Receive Date: 08/03/04

QC Type	Analyte	CAS #	QC Found	QC Yield	Units	Analysis Date	Lower Limit	Upper Limit	RQ
<b>BATCH QC</b>									
BLANK	1,1-Dichloroethane	75-34-3	< 1.0	n/a	ug/L	08/05/04			U
BLANK	1,1,1-Trichloroethane	71-55-6	< 1.0	n/a	ug/L	08/05/04			U
BLANK	1,1,2-Trichloroethane	79-00-5	< 1.0	n/a	ug/L	08/05/04			U
BLANK	1,1,2,2-Tetrachloroethane	79-34-5	< 1.0	n/a	ug/L	08/05/04	0.000	5.000	U
BLANK	1,1-Dichloroethene	75-35-4	< 1.0	n/a	ug/L	08/05/04			U
BLANK	1,2-Dichloroethane	107-06-2	< 1.0	n/a	ug/L	08/05/04			U
BLANK	1,2-Dichloroethene(Total)	540-59-0	< 1.0	n/a	ug/L	08/05/04			U
BLANK	1-Butanol	71-36-3	< 20	n/a	ug/L	08/05/04			U
BLANK	2-Hexanone	591-78-6	< 1.0	n/a	ug/L	08/05/04			U
BLANK	4-Methyl-2-Pentanone	108-10-1	< 1.0	n/a	ug/L	08/05/04			U
BLANK	Acetone	67-64-1	13.000	13.000	ug/L	08/05/04			U
BLANK	Bromodichloromethane	75-27-4	< 1.0	n/a	ug/L	08/05/04			U
BLANK	Benzene	71-43-2	< 1.0	n/a	ug/L	08/05/04			U
BLANK	4-Bromofluorobenzene	460-00-4	50.370	101.000	% Recov	08/05/04	84.000	116.000	
BLANK	Bromoform	75-25-2	< 1.0	n/a	ug/L	08/05/04			U
BLANK	Carbon disulfide	75-15-0	< 1.0	n/a	ug/L	08/05/04			U
BLANK	Carbon tetrachloride	56-23-5	< 1.0	n/a	ug/L	08/05/04			U
BLANK	Dibromochloromethane	124-48-1	< 1.0	n/a	ug/L	08/05/04			U
BLANK	Chloroform	67-66-3	< 1.0	n/a	ug/L	08/05/04			U
BLANK	Chlorobenzene	108-90-7	< 1.0	n/a	ug/L	08/05/04			U
BLANK	cis-1,3-Dichloropropene	10061-01-5	< 1.0	n/a	ug/L	08/05/04			U
BLANK	Chloroethane	75-00-3	< 1.0	n/a	ug/L	08/05/04			U
BLANK	1,2-Dichloroethane-d4	17060-07-0	58.460	117.000	% Recov	08/05/04	82.000	136.000	
BLANK	1,2-Dichloropropane	78-87-5	< 1.0	n/a	ug/L	08/05/04			U
BLANK	Ethylbenzene	100-41-4	< 1.0	n/a	ug/L	08/05/04			U
BLANK	Bromomethane	74-83-9	< 1.0	n/a	ug/L	08/05/04			U
BLANK	Chloromethane	74-87-3	< 1.0	n/a	ug/L	08/05/04			U
BLANK	2-Butanone	78-93-3	< 1.0	n/a	ug/L	08/05/04			U

# WSCF ANALYTICAL LABORATORY QC REPORT

SDG Number: WSCF20041342

Matrix: WATER

Test: VOA Ground Water Protection

SAF Number: F03-026

Sample Date:

Receive Date:

QC Type	Analyte	CAS #	QC Found	QC Yield	Units	Analysis Date	Lower Limit	Upper Limit	RQ
BLANK	Methylenechloride	75-09-2	< 1.0	n/a	ug/L	08/05/04			U
BLANK	Tetrachloroethene	127-18-4	< 1.0	n/a	ug/L	08/05/04			U
BLANK	Styrene	100-42-5	< 1.0	n/a	ug/L	08/05/04			U
BLANK	Xylenes (total)	1330-20-7	< 1.0	n/a	ug/L	08/05/04	0.000	5.000	U
BLANK	Toluene-d8	2037-26-5	57.350	115.000	% Recov	08/05/04	89.000	119.000	
BLANK	Toluene	108-88-3	< 1.0	n/a	ug/L	08/05/04			U
BLANK	trans-1,3-Dichloropropene	10061-02-6	< 1.0	n/a	ug/L	08/05/04			U
BLANK	Trichloroethene	79-01-6	< 1.0	n/a	ug/L	08/05/04			U
BLANK	Vinyl chloride	75-01-4	< 1.0	n/a	ug/L	08/05/04			U
LCS	1,1-Dichloroethene	75-35-4	23.370	93.500	% Recov	08/05/04	70.000	130.000	
LCS	Benzene	71-43-2	28.400	114.000	% Recov	08/05/04	70.000	130.000	
LCS	4-Bromofluorobenzene	460-00-4	49.550	99.100	% Recov	08/05/04	84.000	116.000	
LCS	Chlorobenzene	108-90-7	28.280	113.000	% Recov	08/05/04	70.000	130.000	
LCS	1,2-Dichloroethane-d4	17060-07-0	59.270	119.000	% Recov	08/05/04	82.000	136.000	
LCS	Toluene-d8	2037-26-5	55.470	111.000	% Recov	08/05/04	89.000	119.000	
LCS	Toluene	108-88-3	27.630	111.000	% Recov	08/05/04	70.000	130.000	
LCS	Trichloroethene	79-01-6	27.120	108.000	% Recov	08/05/04	70.000	130.000	

# WSCF ANALYTICAL LABORATORY QC REPORT

SDG Number: WSCF20041342  
 Matrix: WATER  
 Test: Alcohols, Glycols - 8015

SAF Number: F03-026  
 Sample Date: 08/03/04  
 Receive Date: 08/03/04

QC Type	Analyte	CAS #	QC Found	QC Yield	Units	Analysis Date	Lower Limit	Upper Limit	RQ
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Lab ID: W040001406

## BATCH QC ASSOCIATED WITH SAMPLE

DUP	2-Bromoethanol	540-51-2	7800	24.719	RPD	08/16/04	0.000	25.000	
DUP	Ethylene glycol	107-21-1	<5000	n/a	RPD	08/16/04	0.000	25.000	U
MS	2-Bromoethanol	540-51-2	11000	110.000	% Recov	08/16/04	70.000	125.000	
MS	Ethylene glycol	107-21-1	6100	81.333	% Recov	08/16/04	75.000	125.000	
MSD	2-Bromoethanol	540-51-2	11000	110.000	% Recov	08/16/04	70.000	125.000	
MSD	Ethylene glycol	107-21-1	7000	93.333	% Recov	08/16/04	75.000	125.000	
SPK-RPD	2-Bromoethanol	540-51-2	110.000	0.000	RPD	08/16/04	0.000	20.000	
SPK-RPD	Ethylene glycol	107-21-1	93.333	13.741	RPD	08/16/04	0.000	20.000	

## BATCH QC

BLANK	2-Bromoethanol	540-51-2	9300	0.930	ug/L	08/16/04	0.000	10.000	
BLANK	Ethylene glycol	107-21-1	<5000	n/a	ug/L	08/16/04	0.000	5.000	U
LCS	2-Bromoethanol	540-51-2	7600	76.000	% Recov	08/16/04	70.000	130.000	
LCS	Ethylene glycol	107-21-1	7000	93.333	% Recov	08/16/04	70.000	130.000	

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W13q Worklist/Batch/QC Report for Group# 20041357

WL#	S#	Batch	QC#	Tray	Type	Sample#	Test
22986	1	23350	26543	BLANK			ICP-2008 MS All possible metal
22986	2	23350	26543	LCS			ICP-2008 MS All possible metal
22986	4	23350	26543	MS		W04D000038	ICP-2008 MS All possible metal
22986	5	23350	26543	MSD		W04D000038	ICP-2008 MS All possible metal
22986	0	23350	26543	SPK-RPD		W04D000038	ICP-2008 MS All possible metal
22986	6	23350	26543	SAMPLE		W04D000039	ICP-2008 MS All possible metal
23011	1	23375	26607	BLANK			ICP - All possible metals
23011	2	23375	26607	LCS			ICP - All possible metals
23011	4	23375	26607	MS		W04D000039	ICP - All possible metals
23011	5	23375	26607	MSD		W04D000039	ICP - All possible metals
23011	3	23375	26607	SAMPLE		W04D000039	ICP - All possible metals
23011	0	23375	26607	SPK-RPD		W04D000039	ICP - All possible metals

# WSCF ANALYTICAL LABORATORY QC REPORT

SDG Number: 20041357

Matrix: WATER

Test: ICP - All possible metals

SAF Number: N/A

Sample Date: 08/03/04

Receive Date: 08/04/04

QC Type	Analyte	CAS #	Results	Units	Analysis Date	Lower Limit	Upper Limit
<b>Lab ID: W04D000039</b>							
<b>BATCH QC ASSOCIATED WITH SAMPLE</b>							
MS	Silver by ICP	7440-22-4	26.700	% Recov	08/23/04	75.000	125.000
MS	Aluminum by ICP	7429-90-5	91.300	% Recov	08/23/04	75.000	125.000
MS	Arsenic by ICP	7440-38-2	99.250	% Recov	08/23/04	75.000	125.000
MS	Boron by ICP	7440-42-8	94.270	% Recov	08/23/04	70.000	130.000
MS	Barium by ICP	7440-39-3	101.760	% Recov	08/23/04	75.000	125.000
MS	Beryllium by ICP	7440-41-7	103.500	% Recov	08/23/04	75.000	125.000
MS	Bismuth by ICP	7440-69-9	91.710	% Recov	08/23/04	75.000	125.000
MS	Calcium by ICP	7440-70-2	106.900	% Recov	08/23/04	75.000	125.000
MS	Cadmium by ICP	7440-43-9	98.550	% Recov	08/23/04	75.000	125.000
MS	Cobalt by ICP	7440-48-4	99.010	% Recov	08/23/04	75.000	125.000
MS	Chromium by ICP	7440-47-3	94.940	% Recov	08/23/04	75.000	125.000
MS	Copper by ICP	7440-50-8	104.500	% Recov	08/23/04	75.000	125.000
MS	Iron by ICP	7439-89-6	98.040	% Recov	08/23/04	75.000	125.000
MS	Potassium by ICP	7440-09-7	108.680	% Recov	08/23/04	75.000	125.000
MS	Lithium by ICP	7439-93-2	104.800	% Recov	08/23/04	70.000	130.000
MS	Magnesium by ICP	7439-95-4	88.450	% Recov	08/23/04	75.000	125.000
MS	Manganese by ICP	7439-96-5	99.140	% Recov	08/23/04	75.000	125.000
MS	Molybdenum by ICP	7439-98-7	95.340	% Recov	08/23/04	70.000	130.000
MS	Sodium by ICP	7440-23-5	n/a	% Recov	08/23/04	75.000	125.000
MS	Nickel by ICP	7440-02-0	98.930	% Recov	08/23/04	75.000	125.000
MS	Phosphorus by ICP	7723-14-0	107.000	% Recov	08/23/04	70.000	130.000
MS	Lead by ICP	7439-92-1	100.500	% Recov	08/23/04	75.000	125.000
MS	Antimony by ICP	7440-36-0	99.820	% Recov	08/23/04	75.000	125.000
MS	Selenium by ICP	7782-49-2	96.100	% Recov	08/23/04	75.000	125.000
MS	Silicon by ICP	7440-21-3	93.500	% Recov	08/23/04	70.000	130.000
MS	Tin	7440-31-5	97.460	% Recov	08/23/04	70.000	130.000
MS	Strontium by ICP	7440-24-6	93.660	% Recov	08/23/04	70.000	130.000
MS	Titanium by ICP	7440-32-6	97.700	% Recov	08/23/04	75.000	125.000
MS	Thallium by ICP	7440-28-0	96.810	% Recov	08/23/04	75.000	125.000
MS	Vanadium by ICP	7440-62-2	95.900	% Recov	08/23/04	75.000	125.000
MS	Zinc by ICP	7440-68-6	103.200	% Recov	08/23/04	75.000	125.000
MS	Zirconium by ICP	7440-67-7	106.880	% Recov	08/23/04	75.000	125.000
MSD	Silver by ICP	7440-22-4	12.450	% Recov	08/23/04	75.000	125.000
MSD	Aluminum by ICP	7429-90-5	89.220	% Recov	08/23/04	75.000	125.000
MSD	Arsenic by ICP	7440-38-2	97.750	% Recov	08/23/04	75.000	125.000
MSD	Boron by ICP	7440-42-8	93.550	% Recov	08/23/04	75.000	125.000
MSD	Barium by ICP	7440-39-3	99.550	% Recov	08/23/04	75.000	125.000
MSD	Beryllium by ICP	7440-41-7	101.400	% Recov	08/23/04	75.000	125.000
MSD	Bismuth by ICP	7440-69-9	90.270	% Recov	08/23/04	75.000	125.000
MSD	Calcium by ICP	7440-70-2	102.900	% Recov	08/23/04	75.000	125.000
MSD	Cadmium by ICP	7440-43-9	98.920	% Recov	08/23/04	75.000	125.000
MSD	Cobalt by ICP	7440-48-4	97.210	% Recov	08/23/04	75.000	125.000

# WSCF ANALYTICAL LABORATORY QC REPORT

SDG Number: 20041357

Matrix: WATER

Test: ICP - All possible metals

SAF Number: N/A

Sample Date: 08/03/04

Receive Date: 08/04/04

QC Type	Analyte	CAS #	Results	Units	Analysis Date	Lower Limit	Upper Limit
MSD	Chromium by ICP	7440-47-3	93.390	% Recov	08/23/04	75.000	125.000
MSD	Copper by ICP	7440-50-8	102.500	% Recov	08/23/04	75.000	125.000
MSD	Iron by ICP	7439-89-6	96.570	% Recov	08/23/04	75.000	125.000
MSD	Potassium by ICP	7440-09-7	105.280	% Recov	08/23/04	75.000	125.000
MSD	Lithium by ICP	7439-93-2	101.200	% Recov	08/23/04	75.000	125.000
MSD	Magnesium by ICP	7439-95-4	89.450	% Recov	08/23/04	75.000	125.000
MSD	Manganese by ICP	7439-96-5	97.130	% Recov	08/23/04	75.000	125.000
MSD	Molybdenum by ICP	7439-98-7	94.090	% Recov	08/23/04	75.000	125.000
MSD	Sodium by ICP	7440-23-5	n/a	% Recov	08/23/04	75.000	125.000
MSD	Nickel by ICP	7440-02-0	97.350	% Recov	08/23/04	75.000	125.000
MSD	Phosphorus by ICP	7723-14-0	103.100	% Recov	08/23/04	75.000	125.000
MSD	Lead by ICP	7439-92-1	100.700	% Recov	08/23/04	75.000	125.000
MSD	Antimony by ICP	7440-36-0	98.000	% Recov	08/23/04	75.000	125.000
MSD	Selenium by ICP	7782-49-2	92.490	% Recov	08/23/04	75.000	125.000
MSD	Silicon by ICP	7440-21-3	91.520	% Recov	08/23/04	75.000	125.000
MSD	Tin	7440-31-5	95.380	% Recov	08/23/04	75.000	125.000
MSD	Strontium by ICP	7440-24-6	91.790	% Recov	08/23/04	75.000	125.000
MSD	Titanium by ICP	7440-32-6	95.650	% Recov	08/23/04	75.000	125.000
MSD	Thallium by ICP	7440-28-0	96.300	% Recov	08/23/04	75.000	125.000
MSD	Vanadium by ICP	7440-62-2	94.620	% Recov	08/23/04	75.000	125.000
MSD	Zinc by ICP	7440-66-6	100.300	% Recov	08/23/04	75.000	125.000
MSD	Zirconium by ICP	7440-67-7	104.780	% Recov	08/23/04	75.000	125.000
SPK-RPD	Silver by ICP	7440-22-4	72.797	RPD	08/23/04	0.000	20.000
SPK-RPD	Aluminum by ICP	7429-90-5	2.304	RPD	08/23/04	0.000	20.000
SPK-RPD	Arsenic by ICP	7440-38-2	1.523	RPD	08/23/04	0.000	20.000
SPK-RPD	Boron by ICP	7440-42-8	0.767	RPD	08/23/04	0.000	20.000
SPK-RPD	Barium by ICP	7440-39-3	2.196	RPD	08/23/04	0.000	20.000
SPK-RPD	Beryllium by ICP	7440-41-7	2.050	RPD	08/23/04	0.000	20.000
SPK-RPD	Bismuth by ICP	7440-69-9	1.583	RPD	08/23/04	0.000	20.000
SPK-RPD	Calcium by ICP	7440-70-2	3.813	RPD	08/23/04	0.000	20.000
SPK-RPD	Cadmium by ICP	7440-43-9	1.668	RPD	08/23/04	0.000	20.000
SPK-RPD	Cobalt by ICP	7440-48-4	1.835	RPD	08/23/04	0.000	20.000
SPK-RPD	Chromium by ICP	7440-47-3	1.646	RPD	08/23/04	0.000	20.000
SPK-RPD	Copper by ICP	7440-50-8	1.932	RPD	08/23/04	0.000	20.000
SPK-RPD	Iron by ICP	7439-89-6	1.511	RPD	08/23/04	0.000	20.000
SPK-RPD	Potassium by ICP	7440-09-7	3.178	RPD	08/23/04	0.000	20.000
SPK-RPD	Lithium by ICP	7439-93-2	3.495	RPD	08/23/04	0.000	20.000
SPK-RPD	Magnesium by ICP	7439-95-4	1.124	RPD	08/23/04	0.000	20.000
SPK-RPD	Manganese by ICP	7439-96-5	2.048	RPD	08/23/04	0.000	20.000
SPK-RPD	Molybdenum by ICP	7439-98-7	1.320	RPD	08/23/04	0.000	20.000
SPK-RPD	Sodium by ICP	7440-23-5	n/a	RPD	08/23/04	0.000	20.000
SPK-RPD	Nickel by ICP	7440-02-0	1.610	RPD	08/23/04	0.000	20.000
SPK-RPD	Phosphorus by ICP	7723-14-0	3.713	RPD	08/23/04	0.000	20.000
SPK-RPD	Lead by ICP	7439-92-1	0.199	RPD	08/23/04	0.000	20.000
SPK-RPD	Antimony by ICP	7440-36-0	1.840	RPD	08/23/04	0.000	20.000
SPK-RPD	Selenium by ICP	7782-49-2	3.828	RPD	08/23/04	0.000	20.000

# WSCF ANALYTICAL LABORATORY QC REPORT

SDG Number: 20041357

Matrix: WATER

Test: ICP - All possible metals

SAF Number: N/A

Sample Date: 08/03/04

Receive Date: 08/04/04

QC Type	Analyte	CAS #	Results	Units	Analysis Date	Lower Limit	Upper Limit
SPK-RPD	Silicon by ICP	7440-21-3	2.140	RPD	08/23/04	0.000	20.000
SPK-RPD	Tin	7440-31-5	2.157	RPD	08/23/04	0.000	20.000
SPK-RPD	Strontium by ICP	7440-24-6	2.017	RPD	08/23/04	0.000	20.000
SPK-RPD	Titanium by ICP	7440-32-6	2.121	RPD	08/23/04	0.000	20.000
SPK-RPD	Thallium by ICP	7440-28-0	0.528	RPD	08/23/04	0.000	20.000
SPK-RPD	Vanadium by ICP	7440-62-2	1.344	RPD	08/23/04	0.000	20.000
SPK-RPD	Zinc by ICP	7440-66-6	2.850	RPD	08/23/04	0.000	20.000
SPK-RPD	Zirconium by ICP	7440-67-7	1.984	RPD	08/23/04	0.000	20.000

## BATCH QC

BLANK	Silver by ICP	7440-22-4	2.1	ug/L	08/23/04	-4.000	4.000
BLANK	Aluminum by ICP	7429-90-5	<27	ug/L	08/23/04	-46.000	46.000
BLANK	Arsenic by ICP	7440-38-2	<22	ug/L	08/23/04	-69.000	69.000
BLANK	Boron by ICP	7440-42-8	<28	ug/L	08/23/04	-10.000	10.000
BLANK	Barium by ICP	7440-39-3	<1	ug/L	08/23/04	-4.000	4.000
BLANK	Beryllium by ICP	7440-41-7	<1	ug/L	08/23/04	-4.000	4.000
BLANK	Bismuth by ICP	7440-69-9	<0.1	ug/L	08/23/04	-6.000	6.000
BLANK	Calcium by ICP	7440-70-2	<16	ug/L	08/23/04	-68.000	68.000
BLANK	Cadmium by ICP	7440-43-9	<1	ug/L	08/23/04	-8.000	8.000
BLANK	Cobalt by ICP	7440-48-4	1.4	ug/L	08/23/04	-4.000	4.000
BLANK	Chromium by ICP	7440-47-3	<3.2	ug/L	08/23/04	-7.000	7.000
BLANK	Copper by ICP	7440-50-8	<3.3	ug/L	08/23/04	-4.000	4.000
BLANK	Iron by ICP	7439-89-6	<21	ug/L	08/23/04	-34.000	34.000
BLANK	Potassium by ICP	7440-09-7	<115	ug/L	08/23/04	-730.000	730.000
BLANK	Lithium by ICP	7439-93-2	<1	ug/L	08/23/04	-4.000	4.000
BLANK	Magnesium by ICP	7439-95-4	<19	ug/L	08/23/04	-91.000	91.000
BLANK	Manganese by ICP	7439-96-5	<1	ug/L	08/23/04	-4.000	4.000
BLANK	Molybdenum by ICP	7439-98-7	<4	ug/L	08/23/04	0.000	1000.000
BLANK	Sodium by ICP	7440-23-5	<200	ug/L	08/23/04	-79.000	79.000
BLANK	Nickel by ICP	7440-02-0	<1.4	ug/L	08/23/04	-15.000	15.000
BLANK	Phosphorus by ICP	7723-14-0	<49	ug/L	08/23/04	0.000	1000.000
BLANK	Lead by ICP	7439-92-1	<21	ug/L	08/23/04	-28.000	28.000
BLANK	Antimony by ICP	7440-36-0	<25	ug/L	08/23/04	-50.000	50.000
BLANK	Selenium by ICP	7782-49-2	<19	ug/L	08/23/04	-130.000	130.000
BLANK	Silicon by ICP	7440-21-3	<17	ug/L	08/23/04	-22.000	22.000
BLANK	Tin	7440-31-5	<18	ug/L	08/23/04	0.000	1000.000
BLANK	Strontium by ICP	7440-24-6	<1.3	ug/L	08/23/04	0.000	1000.000
BLANK	Titanium by ICP	7440-32-6	<2.6	ug/L	08/23/04	-5.000	5.000
BLANK	Thallium by ICP	7440-28-0	<20	ug/L	08/23/04	-54.000	54.000
BLANK	Vanadium by ICP	7440-62-2	<3	ug/L	08/23/04	-8.000	8.000
BLANK	Zinc by ICP	7440-66-6	<3	ug/L	08/23/04	-6.000	6.000
BLANK	Zirconium by ICP	7440-67-7	<2.00	ug/L	08/23/04	-1.000	1.000
LCS	Silver by ICP	7440-22-4	96.950	% Recov	08/23/04	80.000	120.000
LCS	Aluminum by ICP	7429-90-5	90.520	% Recov	08/23/04	80.000	120.000
LCS	Arsenic by ICP	7440-38-2	99.770	% Recov	08/23/04	80.000	120.000
LCS	Boron by ICP	7440-42-8	94.530	% Recov	08/23/04	80.000	120.000

# WSCF ANALYTICAL LABORATORY QC REPORT

SDG Number: 20041357

Matrix: WATER

Test: ICP - All possible metals

SAF Number: N/A

Sample Date:

Receive Date:

QC Type	Analyte	CAS #	Results	Units	Analysis Date	Lower Limit	Upper Limit
LCS	Barium by ICP	7440-39-3	103.700	% Recov	08/23/04	80.000	120.000
LCS	Beryllium by ICP	7440-41-7	106.300	% Recov	08/23/04	80.000	120.000
LCS	Bismuth by ICP	7440-69-9	94.210	% Recov	08/23/04	80.000	120.000
LCS	Calcium by ICP	7440-70-2	99.570	% Recov	08/23/04	80.000	120.000
LCS	Cadmium by ICP	7440-43-9	98.730	% Recov	08/23/04	80.000	120.000
LCS	Cobalt by ICP	7440-48-4	99.680	% Recov	08/23/04	80.000	120.000
LCS	Chromium by ICP	7440-47-3	97.390	% Recov	08/23/04	80.000	120.000
LCS	Copper by ICP	7440-50-8	106.100	% Recov	08/23/04	80.000	120.000
LCS	Iron by ICP	7439-89-6	99.850	% Recov	08/23/04	80.000	120.000
LCS	Potassium by ICP	7440-09-7	107.700	% Recov	08/23/04	80.000	120.000
LCS	Lithium by ICP	7439-93-2	110.300	% Recov	08/23/04	80.000	120.000
LCS	Magnesium by ICP	7439-95-4	95.160	% Recov	08/23/04	80.000	120.000
LCS	Manganese by ICP	7439-98-5	100.700	% Recov	08/23/04	80.000	120.000
LCS	Molybdenum by ICP	7439-98-7	96.840	% Recov	08/23/04	80.000	120.000
LCS	Sodium by ICP	7440-23-5	104.200	% Recov	08/23/04	80.000	120.000
LCS	Nickel by ICP	7440-02-0	99.790	% Recov	08/23/04	80.000	120.000
LCS	Phosphorus by ICP	7723-14-0	100.400	% Recov	08/23/04	80.000	120.000
LCS	Lead by ICP	7439-92-1	100.700	% Recov	08/23/04	80.000	120.000
LCS	Antimony by ICP	7440-38-0	99.100	% Recov	08/23/04	80.000	120.000
LCS	Selenium by ICP	7782-49-2	96.980	% Recov	08/23/04	80.000	120.000
LCS	Silicon by ICP	7440-21-3	92.180	% Recov	08/23/04	80.000	120.000
LCS	Tin	7440-31-5	96.020	% Recov	08/23/04	80.000	120.000
LCS	Strontium by ICP	7440-24-6	95.650	% Recov	08/23/04	80.000	120.000
LCS	Titanium by ICP	7440-32-6	99.660	% Recov	08/23/04	80.000	120.000
LCS	Thallium by ICP	7440-28-0	97.990	% Recov	08/23/04	80.000	120.000
LCS	Vanadium by ICP	7440-62-2	97.490	% Recov	08/23/04	80.000	120.000
LCS	Zinc by ICP	7440-66-6	100.100	% Recov	08/23/04	80.000	120.000
LCS	Zirconium by ICP	7440-67-7	108.800	% Recov	08/23/04	80.000	120.000

**W1141-SLF-04-236**

**ATTACHMENT 3**

**SAMPLE RECEIPT INFORMATION**

Consisting of 2 pages  
Not including cover page

9/2/04

**Waste Sampling and Characterization Facility**  
 P.O. BOX 1970 S3-30, Richland, WA 99352  
 PHONE: (509) 373-7004/FAX: (509) 373-7134

File #

**ACKNOWLEDGMENT OF SAMPLES RECEIVED**

Groundwater Remediation Program

Richland, WA 99354  
 Attn: Steve Trent

Customer Code: GPP  
 PO#: 119143/ES10  
 Group#: 20041342  
 Project#: F03-026  
 Proj Mgr: Steve Trent A0-21  
 Phone: 373-5869

The following samples were received from you on 08/03/04. They have been scheduled for the tests listed beside each sample. If this information is incorrect, please contact your service representative. Thank you for using Waste Sampling and Characterization Facility.

Sample#	Sample Id	Matrix	Sample Date
Tests Scheduled			
W040001406 B191D6	TRENT	Water	08/03/04
	@2008	@8015GPP @AB-32 @GPP6010 @IC-30	
	@SVOCGPP	@VOA-GPP NH4-IC PH-30	

**Test Acronym Description**

Test Acronym	Description
@2008	ICP-2008 MS All possible metal
@8015GPP	Alcohols, Glycols - 8015
@AB-32	Gross Alpha/Gross Beta (AB32)
@GPP6010	ICP Metals Analysis, Grd H2O P
@IC-30	Anions by Ion Chromatography
@SVOCGPP	SW-846 8270B Semi-Vols
@VOA-GPP	VOA Ground Water Protection
NH4-IC	Ammonia (N) by IC
PH-30	pH Direct Measurement

FLUOR Hanford Inc. 9/2		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST						F03-026-008		PAGE 1 OF 1		
COLLECTOR Hughes/Wiberg/Pfister/Pope		COMPANY CONTACT MW Benecke			TELEPHONE NO. 376-002		PROJECT COORDINATOR TRENT, SJ		PRICE CODE 7N		DATA TURNAROUND 45 Days / 45 Days	
SAMPLING LOCATION 200-LW-1; 216-S-20		PROJECT DESIGNATION 200-LW-1/LW-2 Characterization - Water					SAF NO. F03-026		AIR QUALITY			
ICE CHEST NO.		FIELD LOGBOOK NO. <b>HNF-N-356-1</b>		COA 119143ES10		METHOD OF SHIPMENT Government Vehicle						
SHIPPED TO Waste Sampling & Characterization		OFFSITE PROPERTY NO. N/A			BILL OF LADING/AIR BILL NO. N/A							
<b>MATRIX*</b> A=Air DL=Drum Liquids DS=Drum Solids L=Liquid O=Oil S=Soil SE=Sediment T=Tissue V=Vegetation W=Water WI=Wipe X=Other	POSSIBLE SAMPLE HAZARDS/ REMARKS N/A		PRESERVATION	HCl to pH <2/Cool 4C	Cool 4C	HNO3 to pH <2	Cool 4C	Cool 4C	HNO3 to pH <2	NONE	NONE	
			TYPE OF CONTAINER	aGs*	aG	P	P	aGs*	P	P	P	
			NO. OF CONTAINER(S)	3	4	1	1	3	2	1	1	
	VOLUME	40mL	1000mL	500mL	500mL	40mL	1000mL	125mL	250mL			
	SPECIAL HANDLING AND/OR STORAGE N/A	SAMPLE ANALYSIS		SEE ITEM (1) IN SPECIAL INSTRUCTIONS	SEE ITEM (2) IN SPECIAL INSTRUCTIONS	SEE ITEM (3) IN SPECIAL INSTRUCTIONS	SEE ITEM (4) IN SPECIAL INSTRUCTIONS	SEE ITEM (5) IN SPECIAL INSTRUCTIONS	Gross Alpha; Gross Beta;	PH(water) Cations 9040 (1C-300-7)		
SAMPLE NO.		MATRIX*	SAMPLE DATE B191D6	SAMPLE TIME 8-3-04 0845	X	X	X	X	X	X	X	
			W0040001406									
CHAIN OF POSSESSION		SIGN/ PRINT NAMES				SPECIAL INSTRUCTIONS						
RELINQUISHED BY/REMOVED FROM <i>Anne Wiberg (initials)</i>	DATE/TIME 8-3-04 1010	RECEIVED BY/STORED IN <i>Bobo 8/3/04 1010</i>	DATE/TIME 8-3-04 1010		(1)VOA - 8260A (TCL); VOA - 8260A (Add-On) {1-Butanol} (2)Semi-VOA - 8270A (TCL) {Phenol} Semi-VOA -- 8270A (Add-On) {Tributyl phosphate} (3)ICP/MS - 200.8 (TAL) {Antimony, Barium, Chromium, Copper, Nickel, Silver} ICP/MS - 200.8 (Add-on) {Arsenic, Beryllium, Lead, Selenium} ICP Metals - 6010A (Add-on) {Bismuth} (4)IC Anions - 300.0 {Chloride, Fluoride, Nitrogen in Nitrate, Nitrogen in Nitrite, Phosphate, Sulfate} (5)Alcohols, Glycols, & Ketones - 8015 {Ethylene glycol}							
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME									
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME									
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME									
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME									
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME									

LABORATORY SECTION	RECEIVED BY	TITLE	DATE/TIME
FINAL SAMPLE DISPOSITION	DISPOSAL METHOD	DISPOSED BY	DATE/TIME